

Chico

**Golden Empire Amateur Radio Society, Inc.**

www.gearsww6rhc.org

"Dedicated to Public Service"

# THE RADIATOR

W6RHC  
IRLP #8170

P.O.Box 202 Chico, CA 95927

August 2023 Newsletter

GEARS Founded August 13, 1939

We were all spoiled by the comfortable June weather, so now that we have returned to our normal valley summer heat, many of us headed back inside to our air-conditioned ham shack. However the bands have been a little problematic in the past few weeks. Check out the Radiator article entitled "Who Stole My Bands?" about how the sun is responsible for more than the hot weather.

If you are up for travel, you might want to visit some Hamfests across the country. See the Radiator article on what these events are all about and where they are happening this year.

Closer to home, the Sierra Foothills Amateur Radio Club will be having their Hot RF Nights on August 11<sup>th</sup> at 7 pm in Auburn at the Crossroads Church, 1101 Auburn Ravine Rd. For more information see: <https://www.facebook.com/groups/sfarcw6ek> or <https://www.w6ek.org/>

This year GEARS will be hosting the Steak Bake Barbecue on Sunday September 10<sup>th</sup> in Chico. I'll email the details before the event.

Of course we have our regular activities as well. The Chico ham radio breakfast will be at 9 am Saturday, June 10th at Farmer's Skillet on Cohasset in Chico.

VEC Testing will be August 6<sup>th</sup>, For information or registration call Tom Rider, W6JS 530-514-9211.

The general meeting Monday on August 21st is at the Chico Public Library, 1108 Sherman Ave. 6 pm social hour, 7 pm meeting. This will be our Field Day planning meeting.

Check in to the GEARS Tuesday night net at 7:30 pm on 146.85 - pl 110.9. We'd love to hear from you every week.

Let's have a great summer.

Jim Matthews K6EST

## August 2023 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 7pm PARS Net 7:30pm GEARS Net	2	3 7:30pm Simplex Net	4	5
6 2pm VEC Testing 8pm OARS Net	7 7pm GARS Net 7pm GEARS Board Meeting 8pm ARES Net	8 7pm PARS Net 7:30pm GEARS Net	9	10 6:30 pm PARS meetings 7:30pm Simplex Net	11 7pm OARS meeting 7pm GARS meeting	12 9am Chico Breakfast
13 8pm OARS Net	14 7pm GARS Net 8pm ARES Net	15 7pm PARS Net 7:30pm GEARS Net	16	17 7:30pm Simplex Net	18	19
20 8pm OARS Net	21 7pm GARS Net 8pm ARES Net 6pm GEARS Meeting	22 7pm PARS Net 7:30pm GEARS Net	23	24 7:30 Simplex Net	25	26 9am OARS Breakfast
27	28 7pm GARS Net 8pm ARES Net	29 7pm PARS Net 7:30pm GEARS Net	30	31 7:30 Simplex Net		

**VEC Testing**, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 530-514-9211

**Chico Breakfast** 2nd Saturday 9am Farmers Skillet Cohasset Rd, Chico

**GEARS Board Meeting** 1st Monday 7pm by Google video meetups.

**PARS Meeting** 2nd Thursday 6:30pm, doors open 6pm Old Magalia Community Resource Center

**OARS Meeting** Second Friday of the month, St. Pauls Episcopal Church Hall, Oroville.

**GARS Meeting** Second Friday of the month, Lutheran Church Hall, Artois.

**GEARS Meeting**, Doors open 6pm, meeting 7pm at Chico Public Library, 1108 Sherman Ave, Chico

**OARS Breakfast** 4th Saturday of the month, at Cornucopia of Oroville.

### NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net Monday, 7:00 pm 147.105 MHz + PL 110.09, secondary: 146.850 MHz-PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Tuesday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

# Hamfests—What's in it for Me?

By Mark Haverstock, K8MSH

If you've been to one—or several—you already know. If you haven't, read on. You could be missing a good time!

A hamfest is a convention of amateur radio enthusiasts, usually combining a flea market, workshops, and various other activities of interest to hams. They're often organized by amateur radio clubs and usually held over a weekend. These events can last from several hours to several days



and attract hundreds, if not thousands, of hams. The Dayton Hamvention®, now held in Xenia, Ohio, is currently considered the largest gathering of hams in the world. Attendance in 2023 was nearly 34,000, setting a new record.

**Prizes** You could be a winner! After you purchase a ticket to enter the hamfest, it also serves as your ticket for prizes. There can be hourly drawings for smaller prizes, grand prizes such as radios, or a combination of both. If you want to improve your odds, the hamfest sponsors will be glad to sell you some extra tickets, which are often cheaper when you buy several.

**Flea Markets** You never know what may appear in the outdoor flea market. Typically, you'll find surplus electronic items, new or used radios, TVs, test equipment, audio, computers, miscellaneous parts—just about anything of interest to an electronics enthusiast. It's also an opportunity to join in the action and sell some of your own items. Spaces and tables can be reserved prior to the event.

As you walk through the lines of tables and E-Z ups, boxes full of odds and ends are waiting to be sifted through. They're proof that one person's junk is another one's treasure—you'll never know what some buyers will consider valuable. Tables usually display the more desirable (and often pricier) items. Items at ground level are either too big for placement elsewhere or ones the seller will quickly part with for any reasonable offer.

There's no lack of interesting things, and some you may never have seen before. Don't hesitate to ask the seller questions. You might get a quick lesson on how early tube radios worked, or a story about that large Collins KWM-1 sitting on the table.

Usually, an hour or two before closing time, the majority of flea market vendors will start getting ready to leave for the day. If you have the patience to wait, many will lower prices to avoid taking things home, so it is to your advantage to stay until the end. Sometimes unsold items are even given away!

**Vendors** Some hamfests, especially the larger ones, feature demonstrations and sales booths manned by vendors and makers of amateur radio equipment. Typically, local hamfests feature smaller companies and dealers, likely based within a few hundred miles of the event.

Mostly new items are sold, such as books, power supplies, antennas, coax, meters, and other accessories. You can also find handheld radios, mobile radios, and an occasional used or new HF radio for sale. Be sure to look for “hamfest specials” that may be offered.

Walking around a flea market can make anyone hungry and thirsty. Food is a big part of a hamfest and always seems to be available. Choices will vary, but you can expect fast food items like burgers, sandwiches, fries, drinks, and donuts. Outdoor hamfests often feature concession trailers, adding to the menu choices and variety.

**Meet and Greet** Hamfests provide a chance for amateur radio operators to meet and socialize with fellow hams, share experiences, and make new friends. Some larger events may also include dinners, banquets, or other social events.

Often, local ARRL representatives like the Section Manager or Affiliated Club Coordinator are present to chat or answer your questions about ham radio. They may have promotional materials like pens, stickers, magnets, and frequency charts, as well as several handouts and brochures for a variety of amateur radio interest areas and uses.

It’s also a time to make “eyeball” QSOs with hams you’ve talked to on the air but never met in person. Be sure to take along some QSL cards to exchange and some good stories to tell.

**Presentations and Workshops** Hamfests sometimes feature presentations, workshops, and seminars on various amateur radio topics such as operating techniques, digital modes, emergency communication, and antenna design. These sessions provide an opportunity for you to learn new skills, gain knowledge, and meet experts in the field who can answer your questions.

**Road Trip** Get your friends together and carpool to the next nearby hamfest—make a day of it. They’re held throughout the year and vary in size and scope, from small local gatherings to large national and international events. There are even mini-hamfests, called trunk fests, where hams sell their junk from the trunk and chat with fellow hams. As for trunk fests and flea markets, they’re an eco-friendly way to recycle your ham gear.

Though Covid, eBay, and internet selling sites have reduced attendance over recent years, there has been a growing resurgence of the traditional hamfest. Hams have missed many aspects of these gatherings, from the camaraderie to the bargaining with sellers at the flea market.

Big or small, they’re a valuable opportunity for amateur radio operators to learn, socialize, and connect with the broader amateur radio community. Looking for a hamfest? For a searchable database of hamfests and conventions compiled by the ARRL see: <http://www.arrl.org/hamfests-and-conventions-calendar>

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## Who Stole My Bands? A Look at Ham Radio and the Capricious Sun.

By Mark Haverstock, K8MSH

Forty meters is open. You’re making plenty of QSOs, even snagging a few DX stations. Suddenly, signals begin to fade or even disappear—and they don’t seem to come back. You look outside to see if your antenna is still standing. Fortunately, it’s still there. Your wattmeter indicates the transceiver on your desk is still operational. What happened?



You could be one of the many victims of propagation theft (PT). When we get solar storms and the A index climbs to about level 4-5, the band just falls apart, with lots of absorption and fading. Even DX is not possible. It seems this has happened a lot recently, and it's not just on 40 meters.

On April 21, 2023 at 3:26 p.m. EDT, a coronal mass ejection (CME) erupted from the sun, releasing a burst of plasma that raced toward Earth at nearly two million miles per hour and generated a severe geomagnetic storm (level 4 out of 5 on NOAA's space weather G-scale).

**Here Comes the Sun** Have you ever sat around a campfire and been suddenly surprised when a flaming ember was ejected in your direction? The Sun can also do unexpected and dramatic things. Disturbances of propagation conditions here on Earth are caused by conditions on the Sun known as solar storms.

These solar events can significantly affect the ability to communicate on the medium and high frequency (300 kHz-30 MHz) bands. During these storms, some radio frequencies are absorbed and others are reflected, leading to rapidly fluctuating signals and unexpected propagation paths.

You may hear people complaining when propagation conditions are poor. Just like the weather, there's not a lot we can do about solar disturbances—but we can continue to observe and determine when they're coming our way.

**Solar Flares** Solar flares are enormous explosions that occur on the surface of the Sun. They result in the release of colossal amounts of energy, including sustained high-energy bursts of radiation from VLF to X-ray frequencies and huge amounts of solar material. Most solar flares occur around the peak of the 11-year solar cycle. In addition to this, the larger solar flares also eject large amounts of material in the form of protons.

Flares erupt in just a few minutes with no apparent warning. The first indication of a huge flare is usually some visible brightness near a sunspot group, along with increases in UV and X-ray radiation and VHF radio noise. If the position of the Sun relative to the Earth is right, intense X-ray radiation takes eight minutes to travel the 93 million miles to our planet.

These flares generally only last for about an hour and the surface of the Sun returns to normal—though some post flare loops may remain for a time afterward. The flares affect radio propagation and radio communications on Earth, and the effects may be noticed for some time afterward.

**Coronal Mass Ejections** You know what happens when you eat baked beans or indulge in fizzy drinks. Every so often, the sun also passes gas—but with the power of 20 million nuclear bombs. Scary.

During a CME, enormous bubbles of superheated gas, called plasma, are ejected from the sun. Over the course of several hours, a billion tons of material launch off the sun's surface and accelerate to speeds of a million miles per hour (1.6 million kilometers per hour). The resulting shocks ripple through the solar system. Worst case, they can interrupt satellite operation, radio communication, and power grids on Earth. CMEs can happen several times a day when the sun is most active. During its quieter periods, CMEs occur only about once every five days.

Because CMEs leave the sun in all directions, most don't come anywhere near Earth. But every so often, we're in the crosshairs. When the plasma cloud hits our planet, a geomagnetic storm follows. The fastest of these CMEs can reach Earth in less than a day, with the slowest taking four or five days.

**Geomagnetic Storms** Solar flares and CMEs are two significant triggers for geomagnetic storms. These storms result from variations in the solar wind which produce major changes in the currents, plasmas, and fields in Earth's magnetosphere.

When the solar wind reaches Earth, it sends a flurry of charged particles into the magnetosphere and along Earth's magnetic field lines, toward the poles. The combination of these particles with Earth's atmosphere can produce glowing aurora displays above polar regions. Active auroras can sometimes interfere with communications, disrupting radio and radar signals.



The sudden increase in X-ray energy produced by a large solar flare can increase RF absorption in the Earth's lowest ionospheric layers (D region), sometimes causing a condition known as a Sudden Ionospheric Disturbance (SID). A SID affects all HF communication on the sunlit side of the Earth, and signals in the 2-30 MHz range could disappear entirely. Even background noise may disappear in some extreme cases. These can last from several minutes to several hours.

**Becoming Better Prepared** Solar disturbances are responsible for many of the major changes in the ionosphere. The effects of both CMEs and solar flares can cause changes to ionospheric radio propagation, often disrupting it for hours or sometimes days. NOAA's Space Weather Prediction Center (SPWC) issues warnings and alerts, using several computer models. Whole Atmosphere Model-Ionosphere Plasmasphere Electrodynamics (WAM-IPE) provides guidance to forecasters when issuing alerts for terrestrial radio and Global Navigation Satellite System (GNSS) disturbances.

Obviously, we don't want to be surprised by a powerful flare or Earth-directed CME. That's why astronomers study the sun. With even just a few hours of warning before an impending CME strike, we could safely shut down our stations. Disruptions may then only last a few hours during the actual solar disturbances, rather than the days, weeks and possibly months needed to restore communications.

**Propagation Check** Activity on the Sun has a major impact on ionospheric radio propagation. It affects a variety of forms of HF radio communications, including two-way radio communications, maritime mobile radio communications, radio broadcasting, and amateur radio communications. Knowing the Solar Flux Index and K Index will help you determine current conditions and know what to expect in the near future. There are dozens of sites on the web that provide this data.

## GEARS CENTURY MEMBERS

Michael Ellithorp    Kent Hastings  
Bennett Laskey    Jim Van Sickle  
Stephen McDermott

*We thank these members for their extra support.*

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Your dues and contributions support our local repeaters, ARES, Field Day and outreach events to keep amateur radio alive in our area. GEARS also makes donations to support other local repeaters and clubs.

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